

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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CHECKED FOR COMPLETENESS
OF PARAMETERS ORDERED BY:

[Signature]
5/31/11

TestAmerica Job ID: 360-32831-1
Client Project/Site: Olin Chemical Groundwater Quarterly

For:
Olin Corporation
3855 North Ocoee Street
Suite 200
Cleveland, Tennessee 37312-4441

Attn: Steven Morrow

[Signature]

Authorized for release by:

04/05/2011 10:45:29 AM

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Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all 2003 NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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Case Narrative

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Job ID: 360-32831-1

Laboratory: TestAmerica Westfield

Narrative

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 03/22/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.8 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2 C of the required temperature or method specified range. For samples with a specified temperature of 4 C, samples with a temperature ranging from just above freezing temperature of water to 6 C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

DISSOLVED METALS

Samples OC-GW-202S (360-32831-1), OC-GW-202D (360-32831-2), OC-PZ-16RR (360-32831-3) and OC-PZ-17RR (360-32831-4) were analyzed for dissolved metals in accordance with EPA SW-846 Method 6010B. The samples were analyzed on 03/24/2011.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No difficulties were encountered during the dissolved metals analyses.

All quality control parameters were within the acceptance limits.

ANIONS

Samples OC-GW-202S (360-32831-1), OC-GW-202D (360-32831-2), OC-PZ-16RR (360-32831-3) and OC-PZ-17RR (360-32831-4) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 03/23/2011 and 03/24/2011.

Samples OC-GW-202S (360-32831-1)[10X], OC-GW-202D (360-32831-2)[10X], OC-GW-202D (360-32831-2)[20X], OC-PZ-16RR (360-32831-3)[10X] and OC-PZ-17RR (360-32831-4)[10X] required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

AMMONIA

Samples OC-GW-202S (360-32831-1), OC-GW-202D (360-32831-2), OC-PZ-16RR (360-32831-3) and OC-PZ-17RR (360-32831-4) were analyzed for ammonia in accordance with Lachat 107-06-1B. The samples were prepared on 03/31/2011 and analyzed on 04/04/2011.

Samples OC-GW-202S (360-32831-1)[10X], OC-GW-202D (360-32831-2)[10X], OC-PZ-16RR (360-32831-3)[10X] and OC-PZ-17RR (360-32831-4)[5X] required dilution prior to analysis due to high concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the ammonia analyses.

All quality control parameters were within the acceptance limits.

Case Narrative

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Job ID: 360-32831-1 (Continued)

Laboratory: TestAmerica Westfield (Continued)

SPECIFIC CONDUCTIVITY

Samples OC-GW-202S (360-32831-1), OC-GW-202D (360-32831-2), OC-PZ-16RR (360-32831-3) and OC-PZ-17RR (360-32831-4) were analyzed for specific conductivity in accordance with SM20 2510B. The samples were analyzed on 04/04/2011.

No difficulties were encountered during the conductivity analyses.

All quality control parameters were within the acceptance limits.

MassDEP Analytical Protocol Certification Form

Laboratory Name: **TestAmerica Westfield** Project #: **360-32831-1**

Project Location: RTN:

This form provides certifications for the following data set: list Laboratory Sample ID Number(s):

360-32831-(1-4)

Matrices: ☒ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocols (check all that apply below):

8260 VOC CAM II A <input type="checkbox"/>	7470/7471 Hg CAM III B <input type="checkbox"/>	Mass DEP VPH CAM IV A <input type="checkbox"/>	8081 Pesticides CAM V B <input type="checkbox"/>	7196 Hex Cr CAM VI B <input type="checkbox"/>	Mass DEP APH CAM IX A <input type="checkbox"/>
8270 SVOC CAM II B <input type="checkbox"/>	7010 Metals CAM III C <input type="checkbox"/>	Mass DEP EPH CAM IV B <input type="checkbox"/>	8151 Herbicides CAM V C <input type="checkbox"/>	8330 Explosives CAM VIII A <input type="checkbox"/>	TO-15 VOC CAM IX B <input type="checkbox"/>
6010 Metals CAM III A <input checked="" type="checkbox"/>	6020 Metals CAM III D <input type="checkbox"/>	8082 PCB CAM V A <input type="checkbox"/>	9014 Total Cyanide/PAC CAM VI A <input type="checkbox"/>	332.0 Perchlorate CAM VIII B <input type="checkbox"/>	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding time.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
E	a. VPH, EPH and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
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Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WCS-07-350

H	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s) ?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

¹ All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

Signature: 

Position: Laboratory Director

Printed Name: Steven C. Hartmann

Date: 4/5/11 10:34

This form has been electronically signed and approved

Detection Summary

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Client Sample ID: OC-GW-202S

Lab Sample ID: 360-32831-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	4.7	J	5.0	0.65	ug/L	1		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	490		20	20	mg/L	10		300.0	Total/NA
Chloride	32		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	64		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1300		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-202D

Lab Sample ID: 360-32831-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	3000		100	12	ug/L	1		6010B	Dissolved
Chromium	300		5.0	0.65	ug/L	1		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	1100		40	40	mg/L	20		300.0	Total/NA
Chloride	99		10	10	mg/L	10		300.0	Total/NA
Ammonia	130		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	2500		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-16RR

Lab Sample ID: 360-32831-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	6.0		5.0	0.65	ug/L	1		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	950		20	20	mg/L	10		300.0	Total/NA
Chloride	150		10	10	mg/L	10		300.0	Total/NA
Ammonia	170		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	2600		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-17RR

Lab Sample ID: 360-32831-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	110		100	12	ug/L	1		6010B	Dissolved
Chromium	59		5.0	0.65	ug/L	1		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	250		20	20	mg/L	10		300.0	Total/NA
Chloride	130		10	10	mg/L	10		300.0	Total/NA
Ammonia	34		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	1100		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Method Summary

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL WFD
300.0	Chloride & Sulfate	40CFR136A	TAL WFD
L107-06-1B	Nitrogen Ammonia	LACHAT	TAL WFD
SM 2510B	Conductivity, Specific Conductance	SM	TAL WFD

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

LACHAT = LACHAT

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

Sample Summary

Client: Olin Corporation

TestAmerica Job ID: 360-32831-1

Project/Site: Olin Chemical Groundwater Quarterly

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
360-32831-1	OC-GW-202S	Water	03/21/11 13:45	03/22/11 17:30
360-32831-2	OC-GW-202D	Water	03/21/11 13:20	03/22/11 17:30
360-32831-3	OC-PZ-16RR	Water	03/22/11 13:00	03/22/11 17:30
360-32831-4	OC-PZ-17RR	Water	03/22/11 14:30	03/22/11 17:30

Analytical Data

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: OC-GW-202S

Date Collected: 03/21/11 13:45

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	12	ug/L			03/24/11 12:19	1
Chromium	4.7	J	5.0	0.65	ug/L			03/24/11 12:19	1

Client Sample ID: OC-GW-202D

Date Collected: 03/21/11 13:20

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3000		100	12	ug/L			03/24/11 12:22	1
Chromium	300		5.0	0.65	ug/L			03/24/11 12:22	1

Client Sample ID: OC-PZ-16RR

Date Collected: 03/22/11 13:00

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	12	ug/L			03/24/11 12:31	1
Chromium	6.0		5.0	0.65	ug/L			03/24/11 12:31	1

Client Sample ID: OC-PZ-17RR

Date Collected: 03/22/11 14:30

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	110		100	12	ug/L			03/24/11 12:34	1
Chromium	59		5.0	0.65	ug/L			03/24/11 12:34	1

Analytical Data

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

General Chemistry

Client Sample ID: OC-GW-202S

Date Collected: 03/21/11 13:45

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-1

Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	490		20	20	mg/L			03/23/11 21:05	10
Chloride	32		1.0	1.0	mg/L			03/23/11 20:50	1
Ammonia	64		1.0	1.0	mg/L		03/31/11 11:59	04/04/11 14:13	10
Specific Conductance	1300		1.0	1.0	umhos/cm			04/04/11 11:16	1

Client Sample ID: OC-GW-202D

Date Collected: 03/21/11 13:20

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-2

Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1100		40	40	mg/L			03/24/11 10:06	20
Chloride	99		10	10	mg/L			03/23/11 21:35	10
Ammonia	130		1.0	1.0	mg/L		03/31/11 11:59	04/04/11 14:14	10
Specific Conductance	2500		1.0	1.0	umhos/cm			04/04/11 11:17	1

Client Sample ID: OC-PZ-16RR

Date Collected: 03/22/11 13:00

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-3

Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	950		20	20	mg/L			03/23/11 22:06	10
Chloride	150		10	10	mg/L			03/23/11 22:06	10
Ammonia	170		1.0	1.0	mg/L		03/31/11 11:59	04/04/11 14:15	10
Specific Conductance	2600		1.0	1.0	umhos/cm			04/04/11 11:19	1

Client Sample ID: OC-PZ-17RR

Date Collected: 03/22/11 14:30

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-4

Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	250		20	20	mg/L			03/23/11 22:36	10
Chloride	130		10	10	mg/L			03/23/11 22:36	10
Ammonia	34		0.50	0.50	mg/L		03/31/11 11:59	04/04/11 14:16	5
Specific Conductance	1100		1.0	1.0	umhos/cm			04/04/11 11:20	1

Qualifier Definition/Glossary

Client: Olin Corporation

TestAmerica Job ID: 360-32831-1

Project/Site: Olin Chemical Groundwater Quarterly

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis.
EPA	United States Environmental Protection Agency
ND	Not Detected above the reporting level.
MDL	Method Detection Limit
RL	Reporting Limit
RE, RE1 (etc.)	Indicates a Re-extraction or Reanalysis of the sample.
%R	Percent Recovery
RPD	Relative Percent Difference, a measure of the relative difference between two points.

QC Association Summary

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Metals

Analysis Batch: 70948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 360-70948/13	LCS 360-70948/13	Total/NA	Water	6010B	
MB 360-70948/14	MB 360-70948/14	Total/NA	Water	6010B	
LCSD 360-70948/26	LCSD 360-70948/26	Total/NA	Water	6010B	
360-32831-1	OC-GW-202S	Dissolved	Water	6010B	
360-32831-2	OC-GW-202D	Dissolved	Water	6010B	
360-32831-3	OC-PZ-16RR	Dissolved	Water	6010B	
360-32831-4	OC-PZ-17RR	Dissolved	Water	6010B	

General Chemistry

Analysis Batch: 71005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-32831-1	OC-GW-202S	Total/NA	Water	300.0	
360-32831-1	OC-GW-202S	Total/NA	Water	300.0	
360-32831-2	OC-GW-202D	Total/NA	Water	300.0	
360-32831-3	OC-PZ-16RR	Total/NA	Water	300.0	
360-32831-4	OC-PZ-17RR	Total/NA	Water	300.0	
MB 360-71005/3	MB 360-71005/3	Total/NA	Water	300.0	
LCS 360-71005/4	LCS 360-71005/4	Total/NA	Water	300.0	

Analysis Batch: 71006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 360-71006/3	MB 360-71006/3	Total/NA	Water	300.0	
LCS 360-71006/4	LCS 360-71006/4	Total/NA	Water	300.0	
360-32831-2	OC-GW-202D	Total/NA	Water	300.0	

Prep Batch: 71263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 360-71263/1-A	MB 360-71263/1-A	Total/NA	Water	Distill/Ammonia	
360-32831-1	OC-GW-202S	Total/NA	Water	Distill/Ammonia	
360-32831-2	OC-GW-202D	Total/NA	Water	Distill/Ammonia	
360-32831-3	OC-PZ-16RR	Total/NA	Water	Distill/Ammonia	
360-32831-4	OC-PZ-17RR	Total/NA	Water	Distill/Ammonia	
LCS 360-71263/2-A	LCS 360-71263/2-A	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 71404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 360-71404/1	LCS 360-71404/1	Total/NA	Water	SM 2510B	
360-32831-1	OC-GW-202S	Total/NA	Water	SM 2510B	
360-32831-2	OC-GW-202D	Total/NA	Water	SM 2510B	
360-32831-3	OC-PZ-16RR	Total/NA	Water	SM 2510B	
360-32831-4	OC-PZ-17RR	Total/NA	Water	SM 2510B	
MB 360-71404/3	MB 360-71404/3	Total/NA	Water	SM 2510B	

Analysis Batch: 71427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-32831-1	OC-GW-202S	Total/NA	Water	L107-06-1B	71263
360-32831-2	OC-GW-202D	Total/NA	Water	L107-06-1B	71263
360-32831-3	OC-PZ-16RR	Total/NA	Water	L107-06-1B	71263
360-32831-4	OC-PZ-17RR	Total/NA	Water	L107-06-1B	71263
MB 360-71263/1-A	MB 360-71263/1-A	Total/NA	Water	L107-06-1B	71263
LCS 360-71263/2-A	LCS 360-71263/2-A	Total/NA	Water	L107-06-1B	71263

TestAmerica Westfield

Quality Control Data

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 360-70948/14

Matrix: Water

Analysis Batch: 70948

Client Sample ID: MB 360-70948/14

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	12	ug/L			03/24/11 11:08	1
Chromium	ND		5.0	0.65	ug/L			03/24/11 11:08	1

Lab Sample ID: LCS 360-70948/13

Matrix: Water

Analysis Batch: 70948

Client Sample ID: LCS 360-70948/13

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Aluminum	5000	5040		ug/L		101	80 - 120
Chromium	1000	1000		ug/L		100	80 - 120

Lab Sample ID: LCSD 360-70948/26

Matrix: Water

Analysis Batch: 70948

Client Sample ID: LCSD 360-70948/26

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Aluminum	5000	5020		ug/L		100	80 - 120	0	20
Chromium	1000	993		ug/L		99	80 - 120	1	20

Method: 300.0 - Chloride & Sulfate

Lab Sample ID: MB 360-71005/3

Matrix: Water

Analysis Batch: 71005

Client Sample ID: MB 360-71005/3

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			03/23/11 16:48	1
Chloride	ND		1.0	1.0	mg/L			03/23/11 16:48	1

Lab Sample ID: LCS 360-71005/4

Matrix: Water

Analysis Batch: 71005

Client Sample ID: LCS 360-71005/4

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	80.0	84.1		mg/L		105	85 - 115
Chloride	40.0	42.4		mg/L		106	85 - 115

Lab Sample ID: MB 360-71006/3

Matrix: Water

Analysis Batch: 71006

Client Sample ID: MB 360-71006/3

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			03/24/11 09:36	1
Chloride	ND		1.0	1.0	mg/L			03/24/11 09:36	1

Lab Sample ID: LCS 360-71006/4

Matrix: Water

Analysis Batch: 71006

Client Sample ID: LCS 360-71006/4

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	80.0	85.6		mg/L		107	85 - 115

TestAmerica Westfield

Quality Control Data

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Method: 300.0 - Chloride & Sulfate (Continued)

Lab Sample ID: LCS 360-71006/4

Matrix: Water

Analysis Batch: 71006

Client Sample ID: LCS 360-71006/4

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Chloride	40.0	42.1		mg/L		105	85 - 115

Method: L107-06-1B - Nitrogen Ammonia

Lab Sample ID: MB 360-71263/1-A

Matrix: Water

Analysis Batch: 71427

Client Sample ID: MB 360-71263/1-A

Prep Type: Total/NA

Prep Batch: 71263

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.10	0.10	mg/L		03/31/11 11:59	04/04/11 13:27	1

Lab Sample ID: LCS 360-71263/2-A

Matrix: Water

Analysis Batch: 71427

Client Sample ID: LCS 360-71263/2-A

Prep Type: Total/NA

Prep Batch: 71263

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Ammonia	10.0	9.41		mg/L		94	85 - 115

Method: SM 2510B - Conductivity, Specific Conductance

Lab Sample ID: MB 360-71404/3

Matrix: Water

Analysis Batch: 71404

Client Sample ID: MB 360-71404/3

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			04/04/11 11:04	1

Lab Sample ID: LCS 360-71404/1

Matrix: Water

Analysis Batch: 71404

Client Sample ID: LCS 360-71404/1

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Specific Conductance	1410	1400		umhos/cm		99	85 - 115

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TestAmerica
53 Southampton Road
Westfield, MA

Instrument Dilution Log Book

Analysts Initials	Date	Lab sample ID	Method/Analyte	Initial Sample Volume	Final Volume	Final Dilution	Comments
RWE	3-22-11	32829 C1	300-280	1mL	10mL	10X	CE ⁻ over-range
		C2					
		C3					
		C4					
		32829 C1	300-484R	1mL	10mL	10X	CE ⁻ & SO ₄ ²⁻ over-range NO ₃ ⁻ co-elution with CE ⁻
		C2					
		C3					
		C4					
RWE	3-23-11	32829 C5					
		C6					
		C7					
		32829 C5	300-280				CE ⁻ & SO ₄ ²⁻ over-range
		C6					CE ⁻ over-range
		C7					CE ⁻ & SO ₄ ²⁻ over-range
		32831 B1					SO ₄ ²⁻ over-range
		B2					CE ⁻ & SO ₄ ²⁻ over-range
		B3					
		B4					
RWE	3-24-11	32852 C1	300-280	1mL	10mL	10X	CE ⁻ & SO ₄ ²⁻ over-range
		C2					SO ₄ ²⁻ over-range
		C3					CE ⁻ over-range
		C4					CE ⁻ & SO ₄ ²⁻ over-range
		C5		500μL	10mL	20X	SO ₄ ²⁻ over-range

TestAmerica
53 Southampton Road
Westfield, MA

BL-QA-022

Instrument Dilution Log Book

Analysts Initials	Date	Lab sample ID	Method/Analyte	Initial Sample Volume	Final Volume	Final Dilution	Comments
RWE	3-22-11	32829 C1	300-280	1mL	10mL	10X	Ce ⁻ over-range
		C2					
		C3					
		C4					
		32829 C1	300-484R	1mL	10mL	10X	Ce ⁻ & 504 ⁻² over-range NO ₂ ⁻ co-elution with Ce ⁻
		C2					
		C3					
		C4					
RWE	3-23-11	32829 C5					
		C6					
		C7					
		32829 C5	300-280				Ce ⁻ & 504 ⁻² over-range
		C6					Ce ⁻ over-range
		C7					Ce ⁻ & 504 ⁻² over-range
		32831 B1					504 ⁻² over-range
		B2					Ce ⁻ & 504 ⁻² over-range
		B3					
		B4					
RWE	3-24-11	32852 C1	300-280	1mL	10mL	10X	Ce ⁻ & 504 ⁻² over-range
		C2					504 ⁻² over-range
		C3					Ce ⁻ over-range
		C4					Ce ⁻ & 504 ⁻² over-range
		C5		500μL	10mL	20X	504 ⁻² over-range

TestAmerica
53 Southampton Road
Westfield, MA

BL-QA-022

Lab Chronicle

Client: Olin Corporation
Project/Site: Olin Chemical Groundwater Quarterly

TestAmerica Job ID: 360-32831-1

Client Sample ID: OC-GW-202S

Date Collected: 03/21/11 13:45

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	70948	03/24/11 12:19	TJS	TestAmerica Westfield
Total/NA	Analysis	300.0		1	71005	03/23/11 20:50	RWE	TestAmerica Westfield
Total/NA	Analysis	300.0		10	71005	03/23/11 21:05	RWE	TestAmerica Westfield
Total/NA	Analysis	SM 2510B		1	71404	04/04/11 11:16	RWE	TestAmerica Westfield
Total/NA	Prep	Distill/Ammonia			71263	03/31/11 11:59	RWE	TestAmerica Westfield
Total/NA	Analysis	L107-06-1B		10	71427	04/04/11 14:13	RWE	TestAmerica Westfield

Client Sample ID: OC-GW-202D

Date Collected: 03/21/11 13:20

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	70948	03/24/11 12:22	TJS	TestAmerica Westfield
Total/NA	Analysis	300.0		10	71005	03/23/11 21:35	RWE	TestAmerica Westfield
Total/NA	Analysis	300.0		20	71006	03/24/11 10:06	RWE	TestAmerica Westfield
Total/NA	Analysis	SM 2510B		1	71404	04/04/11 11:17	RWE	TestAmerica Westfield
Total/NA	Prep	Distill/Ammonia			71263	03/31/11 11:59	RWE	TestAmerica Westfield
Total/NA	Analysis	L107-06-1B		10	71427	04/04/11 14:14	RWE	TestAmerica Westfield

Client Sample ID: OC-PZ-16RR

Date Collected: 03/22/11 13:00

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	70948	03/24/11 12:31	TJS	TestAmerica Westfield
Total/NA	Analysis	300.0		10	71005	03/23/11 22:06	RWE	TestAmerica Westfield
Total/NA	Analysis	SM 2510B		1	71404	04/04/11 11:19	RWE	TestAmerica Westfield
Total/NA	Prep	Distill/Ammonia			71263	03/31/11 11:59	RWE	TestAmerica Westfield
Total/NA	Analysis	L107-06-1B		10	71427	04/04/11 14:15	RWE	TestAmerica Westfield

Client Sample ID: OC-PZ-17RR

Date Collected: 03/22/11 14:30

Date Received: 03/22/11 17:30

Lab Sample ID: 360-32831-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	70948	03/24/11 12:34	TJS	TestAmerica Westfield
Total/NA	Analysis	300.0		10	71005	03/23/11 22:36	RWE	TestAmerica Westfield
Total/NA	Analysis	SM 2510B		1	71404	04/04/11 11:20	RWE	TestAmerica Westfield
Total/NA	Prep	Distill/Ammonia			71263	03/31/11 11:59	RWE	TestAmerica Westfield
Total/NA	Analysis	L107-06-1B		5	71427	04/04/11 14:16	RWE	TestAmerica Westfield

Certification Summary

Client: Olin Corporation

TestAmerica Job ID: 360-32831-1

Project/Site: Olin Chemical Groundwater Quarterly

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Florida	NELAC	4	E87912
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New Jersey	NELAC	2	MA008
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	North Carolina	North Carolina DENR	4	647
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

State Accreditation Matrix

Method Name	Description	State where Primary Accreditation is Carried				
		New Hampshire (NELAC) prim.	Mass	Conn	Florida (NELAC)	North Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			NP	
SM 4500 Cl F	Chlorine, Residual		NP			
SM 9215E	Heterotrophic Plate Count (SimPlate)		P			
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP			
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P			
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		P			
1103.1	E.coli		ambient/ source			
Enterolert	Enterococcus					
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)	NP/SW		NP/SW		
245.1	Mercury (CVAA)	NP/P	NP	NP/P		
7470A	Mercury (CVAA)	NP		NP		
7471A	Mercury (CVAA)	SW		SW		
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP	NP/P		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P		NP/P		
3010A	Preparation, Total Metals	NP/P		NP/P		
3020A	Preparation, Total Metals	NP/P/SW		NP/P/SW		
3050B	Preparation, Metals	SW		SW		
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P	P		
608	Organochlorine Pest/PCBs (list upon request)	NP	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP		NP		
3546	Microwave Extraction	SW				
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP		NP		
3540C	Soxhlet Extraction	SW				
3550B	Ultrasonic Extraction	SW		SW		
600/4-81-045	Polychlorinated Biphenyls (PCBs) (GC)		NP	NP		
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW		NP/SW		
8082	PCBs by Gas Chromatography(list upon request)	NP/SW		NP/SW		
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW		NP/SW		
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW		
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)			NP/SW		NP/SW
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P	P		
524.2	Trihalomethane compounds	P	P	P		
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP	NP		
5035	Closed System Purge and Trap	SW		SW		
5030B	Purge and Trap	NP		NP		
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW		NP/SW		
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)			NP/SW		NP/SW
180.1	Turbidity, Nephelometric	P	P	P		
300	Anions, Ion Chromatography	NP/P	NP/P	NP/P		
410.4	COD	NP	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW		SW		
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP	NP		
7196A	Chromium, Hexavalent	NP/SW		NP/SW		
9012A	Cyanide, Total and/or Amenable	NP/SW		NP/SW		
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP		NP		
9040B	pH	NP		NP		
9045C	pH	SW		SW		
L107041C	Nitrogen, Nitrate	NP	P	NP/P		
L107-06-1B	Nitrogen Ammonia	NP	NP	NP/P		
L204001A CN	Cyanide, Total	P	NP/P	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP	NP		
SM 2320B	Alkalinity	NP/P	NP/P	NP/P		
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P	NP/P		
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P	NP/P		
SM 2540D	Solids, Total Suspended (TSS)	NP	NP	NP		
SM 3500 CR D	Chromium, Hexavalent	NP		NP		
SM 4500 H+ B	pH	NP/P	NP/P	NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P	NP/P		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP	NP/P		
SM 4500 P E	Phosphorus, Total	NP	NP	NP		
SM 4500 S2 D	Sulfide, Total	NP		NP		
SM 5210B	BOD, 5-Day	NP	NP	NP		
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP	NP/P		

Not all organic compounds are accredited under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is the laboratories typical listing but is subject to change based on the laboratories current certification standing.

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 360-32831-1

Login Number: 32831

List Source: TestAmerica Westfield

List Number: 1

Creator: Ard, Vanessa L

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

